

INDUSTRY / MOBILE

# Is 5G Harmful for Humans and the Environment?

An overview of the next-gen mobile network and the surrounding controversies associated with its implementation.



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Kārlis Dambrāns/Flickr

In 2018, there was a lot of excitement in the air when several telecommunications companies came forward with their plan to adopt 5G for the future. But some of the recent findings related to the real-world implementation of 5G technology has not been generating the right kind of hype.

There are even moratoriums out there signed by qualified scientists and doctors in regard to the rollout of 5G technology. So why does 5G experience such friction even when it's not even operational yet? Let's review!

First of all, let's see what 5G is and how it differs from the current standard - 4G. This will help us understand why there are many complications associated with 5G.

## 1. Speed

This factor plays a critical role in your mobile browsing experience. If you want to stream in HD, a 3G connection gave you fair enough speeds while 4G can easily stream 1080p videos, granted a good connection. In theory, **5G can offer 1000x** times the speed of 4G. In essence, with good coverage, you can stream 4K videos on your phone, or have a bandwidth of 100 Gb per second.

## 2. Interference

5G uses frequencies that are not crowded with current devices. This is not the case with 4G and 3G devices as they use the same spectrum, causing interference or noise.



Source: ipopba/iStock

5G avoids that by using a different frequency which remains untapped. This will help in gaining better speeds, as well as very low distortion and noise.

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Also, unlike 4G towers which project signals in 360°, 5G antennas are very directional. This again leads to lower interference with other signals that are present in the area.

## **3. Latency**

It is the time delay experienced by the signal that travels from a source device to the target device. With 5G, we can expect to see close to real-time responses between devices, which is touted at 1-millisecond latency whereas 4G stands at 50 milliseconds.

This brings in multiple advantages to several different industries, like healthcare and aviation, where quick response is of prime importance. 5G offers a much lower latency than 4G, however, the exact values in real-life scenarios can only be validated after the official rollout.

## **4. Bandwidth**

5G has more bandwidth than 4G, enabling you to connect more devices to a single internet port, like a router. This means that there will be no issues with overloading that normally become apparent when you connect a host of internet hungry devices to a single router.

This is going to be greatly advantageous for smart homes since it hosts multiple devices that need access to the internet which almost always uses your router for this task.

## **Does 5G Mean a Revolution in How We Communicate?**

Even though 5G sports an impressive spec list, it is still an incremental update over 4G. You will have better speeds and everything you do online will have access to that high-speed internet.

As we discussed, you can also connect more devices to your 5G home network if you plan to ditch the wired connection.

Smartphones are undeniably the prime medium in which most of us access the internet. However, the perks of a 5G connection can only be enjoyed on your smartphone only if your device supports it.

For a wider perspective on the background of the cell phone, you can also check out this video;

This is going to be greatly advantageous for smart homes since it hosts multiple devices that need access to the internet which almost always uses your router for this task. 5G phones are not nearly as common as 4G phones as it is a relatively new technology. Also, 5G integration takes the cost of the phone higher when compared with 4G.

This means that it is going to take a while for the technology to seep into the mid and low tier smartphones.



## The Brief History of the Cell Phone

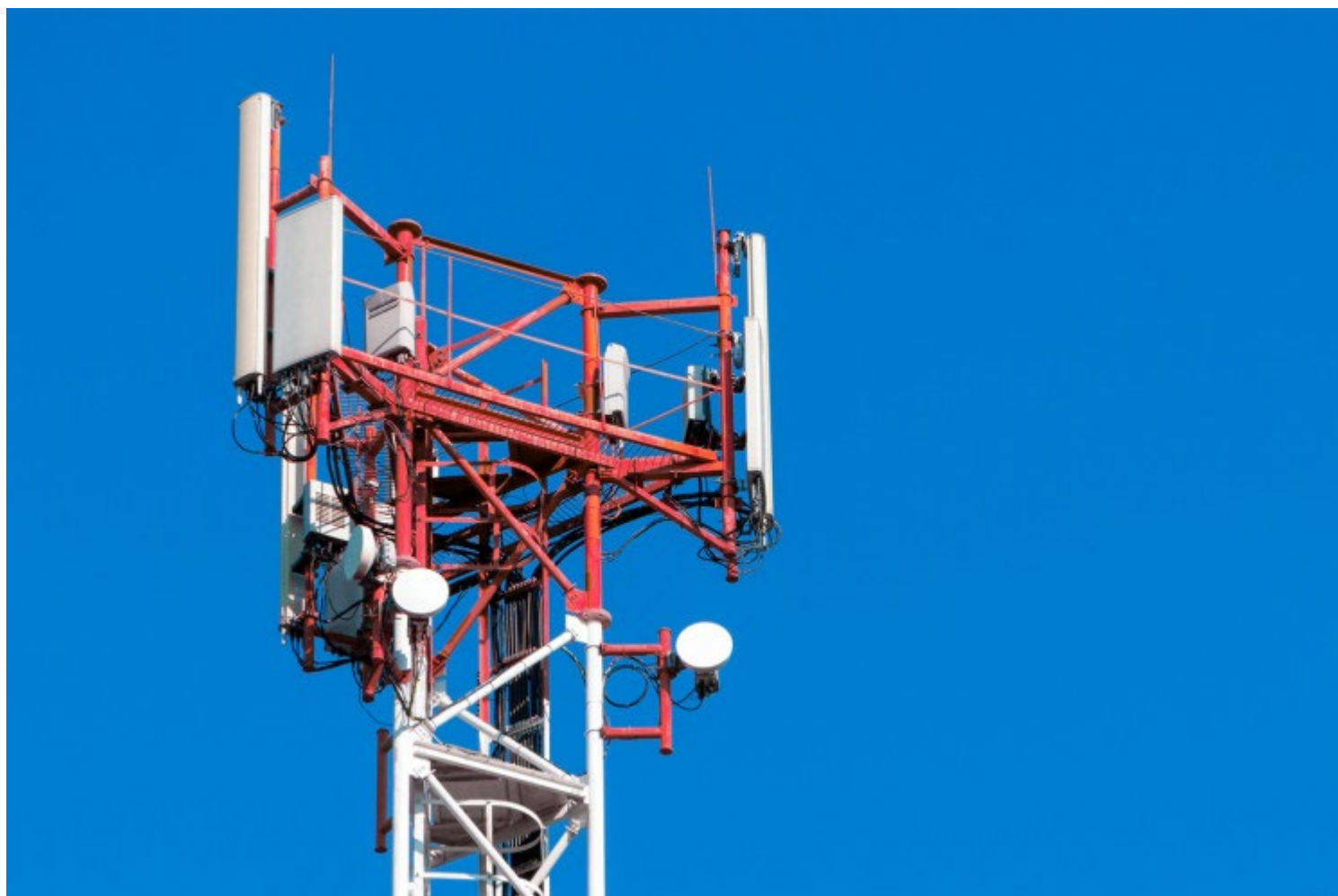
## 5G and Smart Cities, Why Combining the Two Makes Sense?

The low interference factor of 5G means that it can provide good reception to users even when the spectrum is clouded with frequencies. This also extends to the multitude of devices that are used within smart cities.

5G will enable effortless communication between these devices while providing very low latency.

5G telecommunications will become the prime platform for sensors and other smart utilities around the city. As cities become bigger and get loaded with technologies, there is a substantial requirement for a communication platform that would enable the transmission of signals from one point of the city to the other quickly (which translated to high-speed internet with very low latency).

This will help in better communication, risk management, emergency correspondence, and resource management).



Source: *sasha85ru/iStock*

# Is 5G Safe for Humans and Our Environment?

Ever since companies started the rollout of 5G, the public reception towards it was not ideal. There were many allegations that came in 5G's way, some even stating that a 5G network test caused the death of hundreds of birds in the Netherlands.

But the news was later classified as a hoax!

So are there any 5G health risks to talk about? The reason why many condemning 5G arise as a result of the extremely high frequency (Millimeter wave) that it uses which lies between **30Ghz** to **300GHz**.

Due to the high-frequency characteristics, the waves do not travel vast distances like 4G. Hence, antennas must be erected closer to each other to provide clear 5G reception.

We are not talking about a few more antennas, but a lot more, exponentially more!

However, these are not full blown cell towers that we are talking about, but low profile antennas that will take up only a fraction of the space of a regular cell tower. But the real question is does this technology pose health risks and environmental issues?

There are of course two distinct opinions to this question. Wireless company and even government websites such as CDC and EPA will lead you to believe that the radiations emitting from the 5G networks is safe.

But over **215** scientists from **40** different countries have appealed to the United Nations for urgent action to reduce the EMF (electromagnetic field) exposure emitting from wireless sources. These scientists also submitted a letter to the FCC, asking the body to consider health risks and environmental issues before rapidly deploying 5<sup>th</sup> generation wireless infrastructure.

All of these scientists have conducted EMF studies and published their results in peer-reviewed journals that show adverse biological and health effects caused through EMF sources developed by humans.

In another letter written by Dr. Martin Pall, a biochemistry professor at the Washington State University discussed the severe biological and health effects resulting from 5G, stating that the current FCC guidelines are inadequate, obsolete, and in favor of telecommunications industry.





## Is 5G Technology Dangerous

Dr. Pall also believes that there may be major ill-effects in long run after 5G implementation such as blindness, hearing loss, skin cancers, male infertility and thyroid issues.

Surprisingly, FCC's perspective on 5G is different and is making sure that the technology is deployed at the earliest. Instead of laying out strong and effective guidelines, the agency's efforts are towards developing a legislature that will prevent local governments from restricting the implementation of 5G.

Apart from 5G specific studies, there are numerous other researches that show evidence of harmful effects of low-intensity, extremely high electromagnetic radiation on animals.

## What is the Solution?

5G is certainly the future and we are going to see blazing fast internet speeds on our mobile devices hopefully somewhere along 2020. The improvement in connectivity is indeed going to improve our lives, but likely at the expense of our own health in the long run.

This advanced, but untested technology is fast approaching, and there is very little that we can do to stop its widespread implementation. However, one thing that we all should do is understand EMFs better and protect ourselves through proper choice of products.

Try limiting your EMF exposure through limited use of phones and smart devices. If possible, avoid using 5G phones and device, or make use of radiation detectors to know whether you're near the high levels of EMFs.

You can also sign a petition to halt the deployment of the 5G wireless network until a proper framework and guidelines considering health hazards and environmental effects are prepared. Before we make our homes, businesses and cities 'smart', it's important to take 'smart' decisions when adopting the new technology.